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COSTA RICAN DIPTERA

COLLECTED BY PHILIP P. CALVERT, PH.D., 1909-1910

Paper 2.—Tabanidae and Asilidae

BY JAMES S. HINE

The material in these two families of Diptera collected by Dr. P. P. Calvert¹ is of more than ordinary interest, as our knowledge of the range of several species is greatly extended, some new and rare species are presented for study, and the need of further collecting in the region emphasized, if the published results of work done on the faunas of Central and South America are to be harmonized. As a rule the species from the southern parts of North America and the northern parts of South America have been published separately, in some cases without due attention to distribution. My main interest in this region is a study of the range southward of species of the family Tabanidae, especially, occurring in North America. Besides the Costa Rican material in Dr. Calvert's collection I have used much other material from Mexico, Central America and South America and have given such observations on distribution as the specimens and facts at hand furnished.

TABANIDAE

Pangonia prasiniventris Macquart1846. *Pangonia prasiniventris* Macquart, Dipt. Exol., Suppl., i, 29.

Three male specimens taken December 23, 1909, with the note "in road south of Turrúcares." The green or greenish abdomen, darkened toward the tip, and yellowish wings, thorax and legs suggest the species. Macquart's type is reported as having been taken in Colombia, Schiner had seven males and six females from South America, and Osten Sacken had four males from Panama and Colombia. Besides Dr. Calvert's specimens there

¹For data on the localities in which the collection was made, see these Transactions, xl, pp. 1 to 8 (1914), and on the dates of collecting, Appendix I, pp. 493 to 500, of "A Year of Costa Rican Natural History" by A. S. and P. P. Calvert, New York, Macmillan, 1917.

are before me two females from Carillo, Costa Rica, two females from Ecuador and one female from Bartica, British Guiana, collected by Parish. While walking along the railroad at Los Amates, Guatemala, I procured a female specimen of this species from a cow where it was taking blood. From specimens at hand the range may be given as Guatemala to Ecuador and British Guiana.

Erephrosia niger Ricardo

One female specimen from Peralta Station, Costa Rica, August 10, 1909. Miss Gertrude Ricardo described the species in *Annals and Magazine of Natural History*, Series 7, Volume vi, page 292, from a male from Surinam. There is before me a male taken at Bartica, British Guiana, by H. S. Parish, March 20, 1901. Nothing on the habits of the species is available. [This is the species mentioned as *Pangonia pyrausta* in our "A Year of Costa Rican Natural History," page 258.—P. P. Calvert.]

Chrysops tanyceras Osten Sacken

1886. *Chrysops tanyceras* Osten Sacken, *Biol. Cen.-Am., Dipt.*, i, 46.

More than a dozen specimens taken at Peralta Station, March 10, 23, 25 and 26, 1910. There are four species of *Chrysops* from New Mexico, Mexico and Central America with the first and second segments of the antennae elongate and the third segment abnormally short.

They may be separated by the following table:

- | | |
|--|-------------------------------|
| 1. First antennal segment decidedly longer than the second..... | 2 |
| First and second antennal segments nearly equal in length..... | 3 |
| 2. Whole body, including the wings and legs, uniformly black or dark brown. | |
| | melanopterus Hine |
| Body brown, abdominal segments with an apical gray margin which expands into a small triangle at the middle, legs mostly yellow, wings hyaline with the cross-veins and furcation of the third vein margined with brown..... | tanyceras Osten Sacken |
| 3. Body nearly uniform brown without perceptible gray on the sides and posterior margins of the thorax and abdominal segments. . | ceras Townsend |
| Body brown with distinct gray on the sides and posterior margins of the thorax and abdominal segments..... | megaceras Bellardi |

It is very easy to distinguish *melanopterus* on account of its uniform black color, but the other three species are much alike in general appearance. The frontal callosity is normal for *Chrysops* in *ceras*, but of a different type in the others.

I collected *melanopterus* near Puerto Barrios, Guatemala and found the species very persistent in following me, as is common with various species of *Chrysops*, and taking every opportunity to bite that offered.

***Stibasoma flavistigma* Hine**

1912. *Stibasoma flavistigma* Hine, Ohio Nat. xii, 516.

One specimen taken at Guacimo, June 6, 1909. The type of this species was taken at Vera Cruz, Mexico. These two specimens are all that I have seen and, so far as I know, all that have been reported. A rather wide range is indicated by the capture of a specimen so far from the type locality.

***Dichelacera grandis* Ricardo**

Three female specimens taken at Juan Viñas, July 27 and 30, and August 3, 1909. Miss Ricardo described *grandis* in Annals and Magazine of Natural History, Series 7, Volume xiv, page 371, from specimens taken at Belize, British Honduras. These specimens vary slightly from the description of the type, but in general they agree well. Dr. Adolpho Lutz recently described *D. submarginata* from Brazil and his species is somewhat like *grandis*, but a comparison of specimens with the colored figure which he gives reveals a number of specific differences. Miss Ricardo compares *grandis* with *cervicornis* and points out that the two are different in the form of the wing bands. There is some indication, however, that they have been confused by previous writers and from this standpoint there is some doubt whether *cervicornis* is a North American species at all, although Miss Ricardo records it from David, Panama in the same paper in which she describes *grandis*.

If we admit *cervicornis* to the North American fauna, from the records, we have five species which may be separated by the following table:

- | | |
|--|----------------------------|
| 1. General color of the body dark, nearly black..... | 2 |
| General color of the body yellow..... | 3 |
| 2. Thorax yellowish gray pollinose with a shining black crossband. | |
| | scapularis Macquart |
| Thorax black with two golden pilose spots on the anterior half. | |
| | pulchra Williston |
| 3. Smaller species, apex and inner border of the wing nearly uniformly infuscated..... | marginata Macquart |
| Large species, wings in large part yellowish hyaline..... | 4 |

4. Band of the wing as two half bands.....*cervicornis* Fabricius
 Band of the wing as one entire band.....*grandis* Ricardo

The distribution records of these five species show that all of them have quite a wide range, and that some of them have been taken in South America far below the equator. *D. scapularis* has been reported by Bellardi from Tehuantepec and I have seen numerous specimens from Vera Cruz. A male specimen collected by myself at Puerto Barrios, Guatemala is referred here with some doubt.

There is before me a female specimen of *D. emarginata* from the state of Chiapas and numerous others from British Guiana, while Lutz reports specimens from Pará, Brazil.

There appears to be no other record for *pulchra* except the type locality, which is the state of Guerrero, Mexico.

The known range of *grandis* is British Honduras to Costa Rica.

Lutz indicates that the distribution of *cervicornis* is from Panama south to the state of Espirito Santo, Brazil and to Peru, thus establishing the fact that its range is more southern than any of the others mentioned. He calls attention also to Williston's improbable Mexican records, which the author himself considered doubtful at the time he wrote them.

As most of the work in this genus has been with female specimens, there are further problems for solution when the males of the various species are fully considered.

***Tabanus quadripunctatus* Fabricius**

1805. *Tabanus quadripunctatus* Fabricius, Syst. Antl, 99.

Four specimens. Three of them taken at Juan Viñas, February 17, 1910, the other from Cerro Jocosal, February 28. Bellardi called this species *nigropunctatus* and reported it from Cordova and Huastec, Mexico. Osten Sacken had it from Guatemala, Costa Rica and Brazil. My own collecting in Guatemala produced the species from Santa Lucia and Laguna. Several specimens of both sexes were observed flying over water and alighting on protruding stones.

There are a number of specimens before me from Brazil and British Guiana also. Fifteen specimens show a range in size from twelve to eighteen millimeters in total length, but most of them are very near sixteen millimeters long.

***Tabanus alteripennis* Walker**

1860. *Tabanus alteripennis* Walker, Trans. Ent. Soc. London, v, 274.

There are three descriptions of Tabanids that seem to be rather close so far as coloration and wing markings are concerned. Walker described *alteripennis* from Mexico, Osten Sacken described *erebus* from Costa Rica and Bellardi described *caliginosus* from Mexico. The length of the first one is given as four and one-half lines, that of the second as thirteen to fourteen millimeters, and that of the third as twelve millimeters. Four specimens from Juan Viñas measure from seven to nine millimeters and are of the proper length therefore for *alteripennis*. Osten Sacken suggested the close relationship of *alteripennis* to his species, and Williston holds the opinion that *erebus* is the same as *caliginosus*. The striking difference in size indicated leads one to defer the question of synonymy until more material is available.

The wing is brown with a large hyaline spot including the apical half of both basal cells and parts of other cells in that region, another hyaline spot includes the apex of the discal cell and the bases of second and third posterior cells, and a third hyaline spot just before the furcation of the third vein. The body is nearly uniform brown with the apex of the abdomen dark, nearly black. The front is exceptionally narrow and the antenna is yellow with the annulate portion of the third segment black.

***Tabanus venenatus* Osten Sacken**

1886. *Tabanus venenatus* Osten Sacken, Biol. Cent.-Am., Dipt., i, 54.

One specimen, Peralta Station, 1088 ft. alt., March 10, 1910. The third segment of the antenna is very deeply excised forming two branches. General color brown; wing pale brownish, more intense in the region of the stigma and continuing backward as a wide band, but fading out before the hind border is reached. Osten Sacken's specimens are from Guatemala and Panama.

***Tabanus fenestra* Williston**

1887. *Tabanus fenestra* Williston, Trans. Kans. Acad. Sci., x, 141.

Two specimens marked Costa Rica. The type is from San Domingo, and there is before me a specimen from Sanchez, San Domingo. The uniform dark color of the body is distinctive. Thorax dark brown, femora dark, tibiae, tarsi and antennae yellow; wings smoky, darkest anteriorly. Abdomen black with white bloom.

Tabanus trilineatus Latreille

1814. *Tabanus trilineatus* Latreille, Humb. & Bonp. Rec. Obs., fasc. x, 116.

One specimen from Cachí, March 3, 1910. There are a number of species in Mexico, Central America and South America closely related to *trilineatus*. *T. costalis* and *lineola* from the United States also are related to it. Some of the species have hairy eyes and some of them do not. A careful study of extensive collections is necessary in order to fully conclude as to the names to be used in future. Until this is done it is impossible to understand the distribution of the various species concerned.

ASILIDAE

Holcocephala nitida Wiedemann

1830. *Dasypogon nitidus* Wiedemann, Auss. Zweifl. Ins., ii, 643.

One specimen labelled "West of Cachí." Williston identified several specimens from various places in southern Mexico.

Deromyia species

A female specimen, Juan Viñas, near Rio Reventazon, 2500 ft. alt., June 28, 1909, belonging to this genus does not agree with any species I know from North America. It is in first class condition but being a female I prefer not to name it. The palpi are black, legs and antennae red, the last two segments of each tarsus black, thorax red with a thin covering of gray bloom, notum with black stripes separated by golden lines, wing largely hyaline, apex and interior of many of the cells clouded; abdomen uniformly red.

Atomosia macquarti Bellardi

1861. *Atomosia macquarti* Bellardi, Saggio, ii, 20.

One specimen from Cartago, February 6, 1909, agrees fairly well with the description of this species.

Eumecosoma calverti new species

Length 8 millimeters, body shining blue-black, wings uniformly pale brown, front and middle legs nearly entirely yellow, hind legs nearly all black.

Third segment of the antenna enlarged and with a very short, style-like process on its outer side near the apex, as in the other species of the genus, distinctly longer than the combined length of the other two segments which are nearly equal, front and face rather narrow, slightly widened above, vertex scooped out between the eyes and with a very prominent elevation which bears two long, curved bristles, whole space between the eyes golden pollinose; gibbosity small, near the oral margin and bearing only a few, mostly dark,

bristly hairs, beard sparse and pale yellowish, occiput dark with a few bristles. Dorsum of the thorax shining black, a small, pale yellow, pollinose spot on each humerus, sides of the thorax sparsely gray pollinose, the transverse row of bristles beneath the base of each wing pale yellow, halteres yellow, wing uniformly pale brown all over, veins nearly black; all the coxae black, more or less gray pollinose, front and middle legs mostly yellow, a stripe on the upper side of each femur and the apex of each tarsal segment black, hind legs mostly black, immediate base of each femur and each tibia yellow; legs furnished with sparse short hair and numerous long and slender bristles, some of which are black and some yellow.

Holotype.—Female, taken at Juan Viñas, Costa Rica, at an elevation of 3400 feet, September 28, 1909, by Dr. P. P. Calvert.

This genus has not been reported from North America heretofore, but five species have been described from Brazil, Peru and Bolivia. Dr. F. Herman of Erlangen gives an extensive treatise on the genus in *Nova Acta Acad. C. L. C. G.*, band xcvi, page 70, (1912).

***Ommatius marginellus* Fabricius**

1781. *Asilus marginellus* Fabricius, Spec. Ins. ii, 464.

A female specimen from Juan Viñas agrees in size and coloration with specimens of this species from New York and Ohio. I have no way of separating specimens which I have from New York, Ohio, Georgia, Mexico, Guatemala, Costa Rica and British Guiana. Former writers have reported the species from even a wider range than this—all the way from New England to Brazil, including the West Indies.

***Promachus cinctus* Bellardi**

1861. *Promachus cinctus* Bellardi, Saggio, ii, 25.

There are three female specimens of *Promachus* in the collection. At least two are *cinctus*; Juan Viñas, June 28, 1909, near Rio Reventazon, 2500 ft. alt.; Forest on Florida road, west of Guapiles, June 3, 1909, but I am in doubt about the third, mainly on account of its much larger size. Aside from size the hair on various parts of the body is lighter, although the latter is of no uncommon occurrence in various species of Asilidae. The known range of *Promachus cinctus* is from San Lorenzo, Mexico to Trinidad and Costa Rica.

***Elcherax nigripes* Bellardi**

1861. *Erax nigripes* Bellardi, Saggio, ii, 46.

In *Linnaea Entomologica*, band iii (1860), page 396, Loew de-

scribed the genus *Eristicus* without mentioning any species. Some years later he stated that species of this genus are found in America. In 1878, Osten Sacken showed that what we now know as *Erax maculatus* is the type of *Eristicus* and changed the name to *Neoeristicus*, because Wesmael had proposed the former as a generic name in another connection in 1844. In 1861, Bellardi described *nigripes* and *villosus* and placed them in *Eristicus*, but *villosus* is known now to be the same as *Erax maculatus* and Dr. Kertész includes this in the genus *Erax* in his recent catalogue. In 1857, Bigot proposed *Eicherax* as a generic name, and mentioned as the type species *Erax simplex* from South America. A study of numerous specimens of what Bellardi called *Eristicus nigripes* shows that the species belongs to *Eicherax* rather than to *Neoeristicus*, on account of the venation; thus the latter is left without any species, in which case there is no use to retain it.

There are before me more than a dozen specimens of what I call *Eicherax nigripes*, ranging from Cordoba, Mexico to San Sebastiano, Brazil, including two from San Domingo, Costa Rica and several from Bartica, British Guiana.

Since Bellardi described the species Schiner is the only one whom I know to have mentioned additional specimens. In his Novara Reise, he mentions having a pair from South America and suggests changing the name to *bellardii*, because *nigripes* was preoccupied in the genus *Erax*. The species cannot be included in the genus *Erax* because of the venation and other characters, consequently *nigripes* still stands.

Whole body and legs black in ground color, wings uniformly pale brown, venation as in *Asilus*. Length, 12 to 15 millimeters.

Gibbosity of the face prominent, mystax composed of black bristles above and white ones below, beard white and fine, antennae, palpi and proboscis black, front and face rather wide, covered with pale yellow pollen, sides nearly parallel, bristles of the upper part of the occiput black; disk of the thorax with a wide black stripe, which is narrowly divided longitudinally at the middle by a fine gray line, sides of the thorax, including the coxae and most of the scutellum, yellow pollinose; legs black with black bristles, front and hind tibiae and tarsi with golden pile on inner side; wings uniformly pale brown, furcation of the third vein opposite the apex of the discal cell, no appendage, posterior branch of the third vein turns back to meet the costa far beyond the tip of the wing as in *Asilus*. Abdomen black with silvery white distributed as follows: two transverse spots on dorsal margin of the first segment, posterior margins of second and third segments except venter and a rather narrow

interruption on mid-dorsal line, very narrow hind margin of sixth segment and basal three-fourths of the seventh in the female or all of the seventh in the male. These silvery markings have a tendency to vary somewhat but the ones mentioned are fairly constant. In some of the males before me, however, the venter of the abdomen is quite largely silvery.

The structure of the female suggests *Asilus* very much, but the male has genitalia quite like males of the genus *Eraz*. The oviduct in the female is conical much as in *Asilus sericeus*.